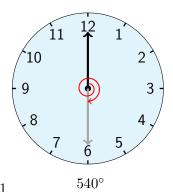
# Play with TikZ

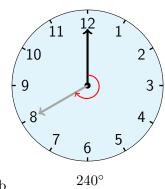
Just Us

December 28, 2018

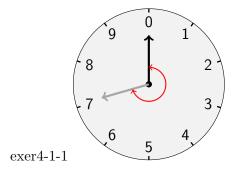
### 1 Chap 4 Trigonometric Functions



exam 4-1-1

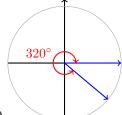


exam 4-1-1b



8/9 of a cake





 ${\it fig-4-1-angles} 320$ 



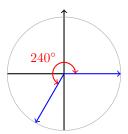


fig-4-1-angles40minutes

40 minutes

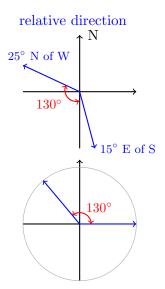


fig-4-1-angles-relative direction

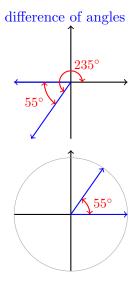
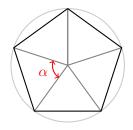


fig-4-1-angles-difference-of-angles



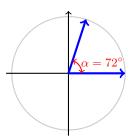
exam 4-1-2a

a.



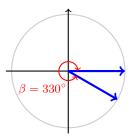
exam 4-1-2b

b.



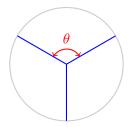
exam 4-1-2aans

a.



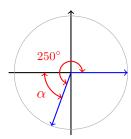
exam 4-1-2bans

b.



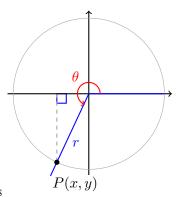
#### exer 4-1-2a

a.

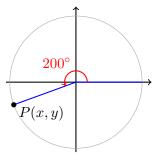


exer 4-1-2b

b.

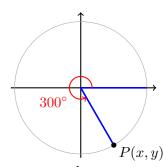


 ${\it fig-4-1} stanpos$ 



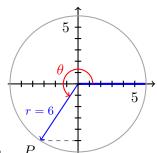
exam 4-1-3a

a.



exam 4-1-3b

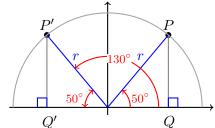
b.



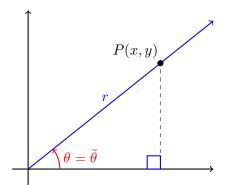
exam4-1-4

3 + 0

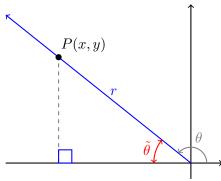
exer4-1-4



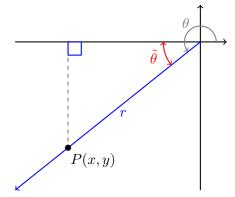
 ${\it fig-4-1-refang}$ 



First-quadrant:  $\tilde{\theta} = \theta$ 



Second-quadrant:  $\tilde{\theta} = 180^{\circ} - 180^{\circ}$ 



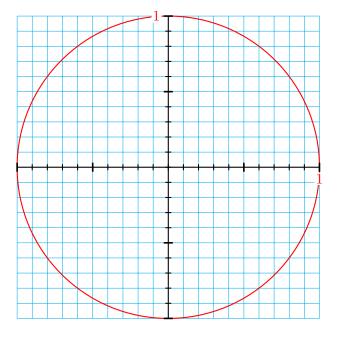
 ${\it fig-4-1}{\it ref}$ 

Third-quadrant:  $\tilde{\theta} = \theta - 180^{\circ}$ 

P(x,y)

Fourth-quadrant:  $\tilde{\theta} = 360^{\circ} - \theta$ 

act4-1 grid



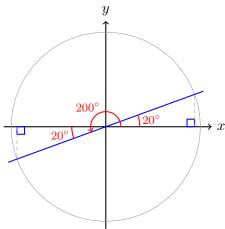
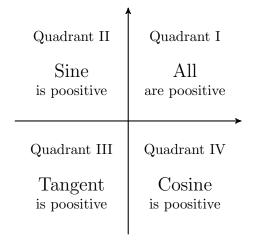
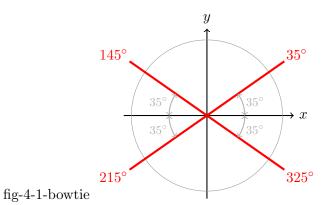


fig-4-1quads

exam 4-1-5

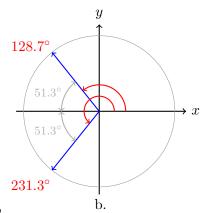




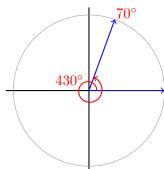
 $308.7^{\circ} \qquad 51.3^{\circ} \qquad x$ 

a.

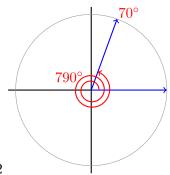
exam 4-1-6a



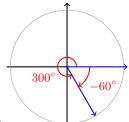
exam 4-1-6b



 ${\it fig-4-1-coterm}$ 



 ${\it fig-4-1-coterm2}$ 



 ${\it fig-4-1-negang}$ 

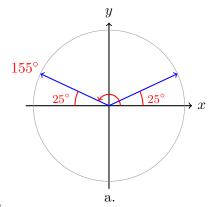


fig-4-1-eqna

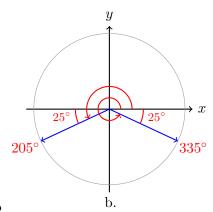
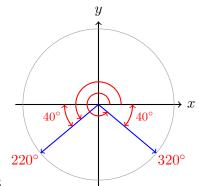
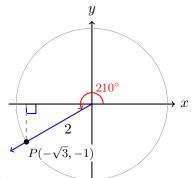


fig-4-1-eqnb



exam4-1-8



exam4-1-9

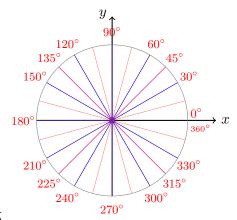
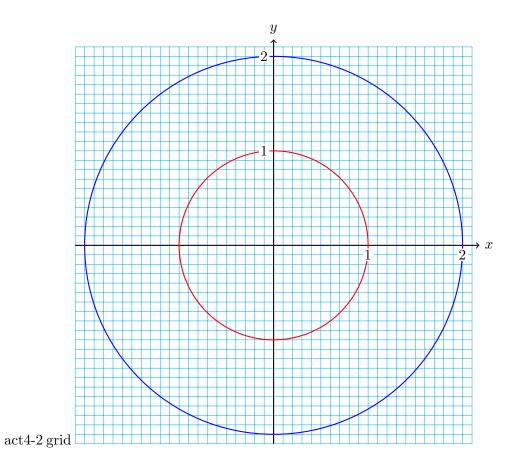
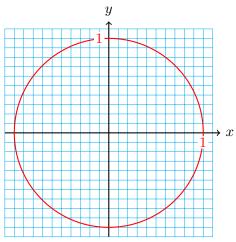
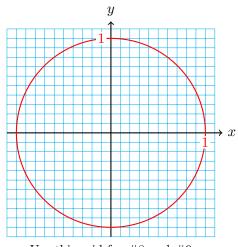


fig-4-1-specang



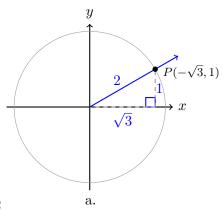
act4-2 grid





Use this grid for #6 and #7

Use this grid for #8 and #9



 ${\it fig-4-1-circle2}$ 

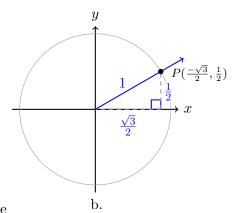
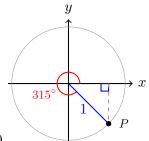
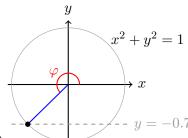


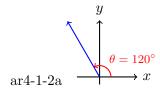
fig-4-1-unitcircle

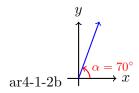


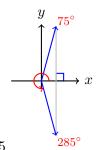
exam 4-1-10



 $\operatorname{exer} 4\text{-}1\text{-}10$ 







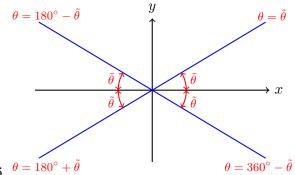
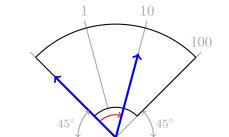
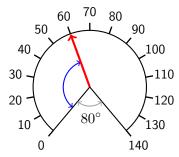


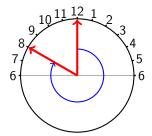
fig-4-1-concept6  $\theta = 180^{\circ} + \tilde{\theta}$ 



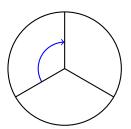
hp4-1-7 an electrical meter dial



hp4-1-8 a speedometer

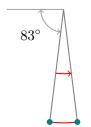


hp4-1-9

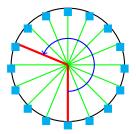


 ${\bf a} \ {\bf sundial}$ 

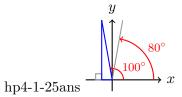
hp4-1-10 a revolving door

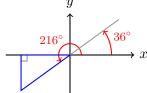


hp4-1-11 a swinging pendulum

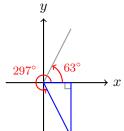


hp4-1-12 a Ferris wheel

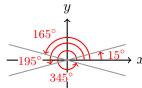




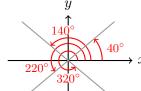
hp4-1-27ans



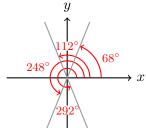
hp4-1-29ans



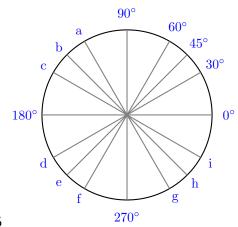
hp4-1-31ans



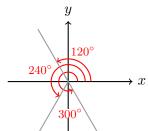
hp4-1-33ans



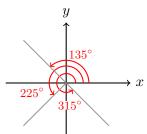
hp4-1-35ans



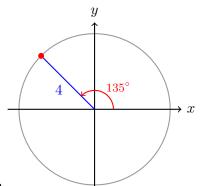
hp4-1-45



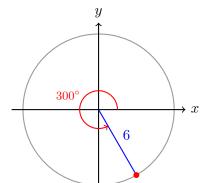
hp4-1-47ans



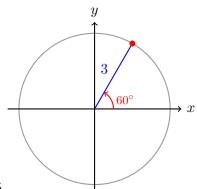
hp4-1-49ans



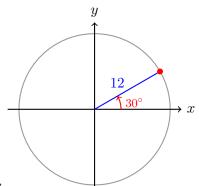
hp4-1-73



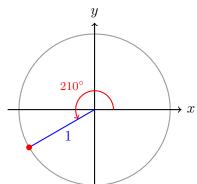
hp4-1-74



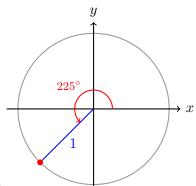
hp4-1-75



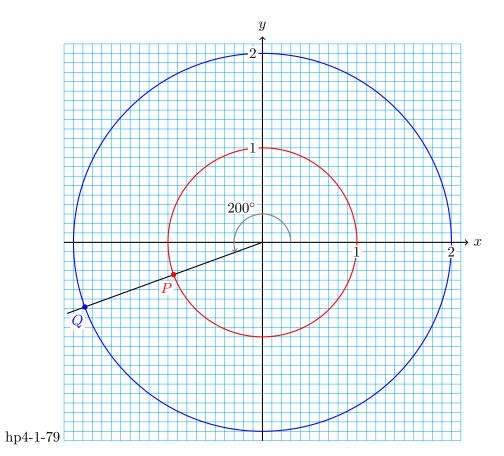
hp4-1-76

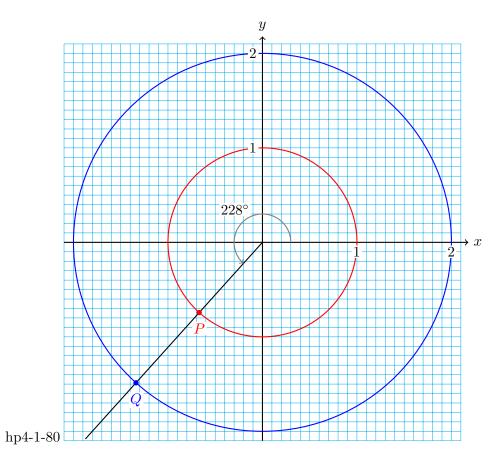


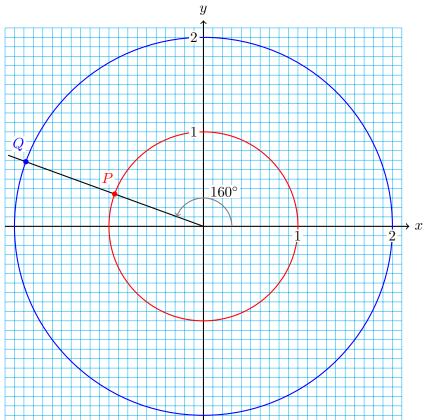
hp4-1-77



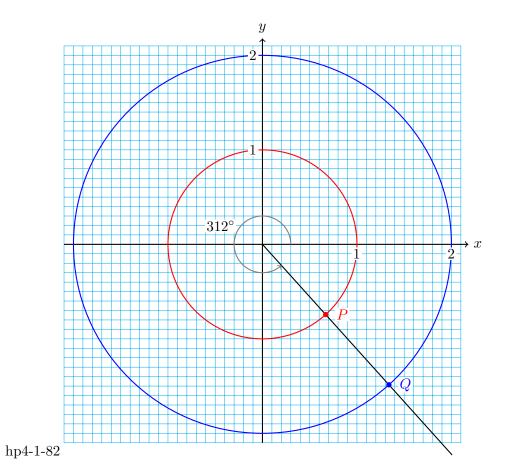
hp4-1-78



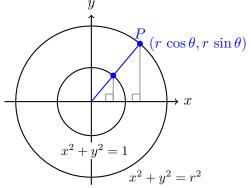




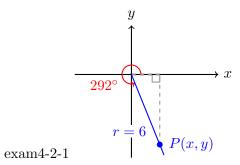
hp4-1-81



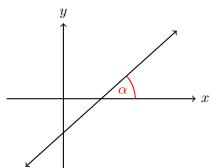
### 1.1 4.2 Graphs of trig functions



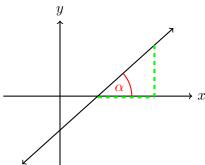
 ${\it fig-4-2-rcircle}$ 



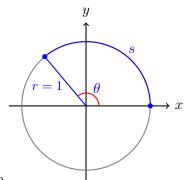
## 2 Stuff for later



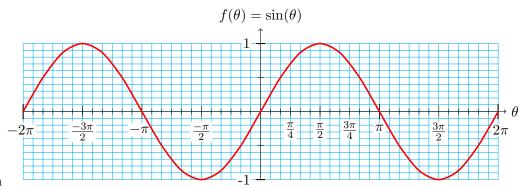
Section 4.2 Angle of inclination



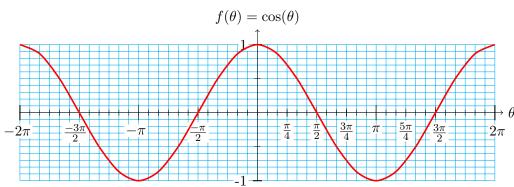
Section 4.2 Angle of inclination



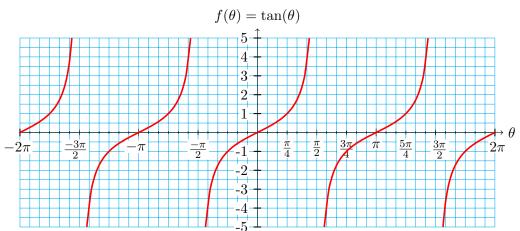
On a unit circle



 $\sin\! e \, \mathrm{graph}$ 

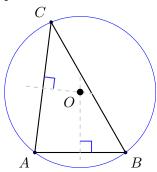


 $\operatorname{cosine}\operatorname{graph}$ 

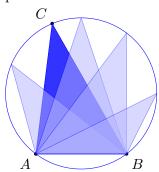


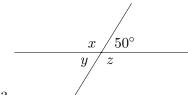
tangent graph

part A: law of sines a circumscribing circle



part B: law of sines a circumscribing circle





Exercise not used?